

(FILE 'HOME' ENTERED AT 12:44:41 ON 02 JUL 2002)

FILE 'USPATFULL' ENTERED AT 12:44:53 ON 02 JUL 2002

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L1      733 S 725/37-56/NCL
L2      124 S 725/60-61/NCL
L3      981 S 725/131-134/NCL OR 725/140-142/NCL OR 725/151-152/NCL
L4      1652 S L1 OR L2 OR L3
L5      26037 S (REAL-TIME OR REALTIME) AND (LINK OR HYPERLINK OR AVATAR OR I
L6      26050 S (REAL-TIME OR REALTIME) AND (LINK OR HYPERLINK OR AVATAR OR I
L7      325 S L4 AND L6
L8      2974 S ((PROGRAM? OR TV OR TELEVISION) (A) (GUIDE OR SCHEDULE))
L9      164 S L7 AND L8
L10     105 S L9 AND (SET-TOP OR SETTOP)
L11     5283 S (REAL-TIME OR REALTIME) (P) (BUTTON OR LINK? OR HYPERLINK? OR A
L12     761 S ((PROGRAM? OR TV OR TELEVISION) (A) (GUIDE OR SCHEDULE)) (3P) (SE
L13     13 S L12 (2P) L11
L14     180 S ((PROGRAM? OR TV OR TELEVISION) (A) (GUIDE OR SCHEDULE)) (P) (REA
L15     16637 S (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BUTTON? OR LINK? OR HYP
L16     31 S L15 AND L14 AND L4
L17     18956 S (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BUTTON? OR LINK? OR HYP
L18     20900 S (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BOX? OR CLICK? OR BUTTO
L19     41 S L14 AND L18 AND L4

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FILE 'EUROPATFULL' ENTERED AT 14:09:17 ON 02 JUL 2002

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L20     324 S L14
L21     60529 S (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BOX? OR CLICK? OR BUTTO
L22     433 S (GUIDE OR SCHEDULE OR PROGRAMMING) (20A) (REALTIME? OR REAL-TIM
L23     364 S L22 AND L21
L24     397 S (REAL-TIME AND (SCHEDULE OR GUIDE) AND TV AND COMMAND?)
L25     1 S (REAL-TIME (50A) (SCHEDULE OR GUIDE) (50A) TV (50A) (ACTION OR COMM

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FILE 'USPATFULL' ENTERED AT 15:01:16 ON 02 JUL 2002

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L26     3 S (REAL-TIME (150A) (SCHEDULE OR GUIDE OR EPG?) (150A) TV (150A) (ACT
L27     3 S (REAL-TIME (150A) (SCHEDULE OR GUIDE OR EPG?) (150A) TV (150A) (ACT
L28     3829 S (GUIDE OR SCHEDULE) (P) (TELEVISION OR TV)
L29     145 S (GUIDE OR SCHEDULE) (P) (TELEVISION OR TV) (P) (REALTIME OR REAL-
L30     57 S (INTERACT?) (P) (GUIDE OR SCHEDULE? OR EPG) AND L29
L31     4 S (TELEVISION (A) METAPHOR)
L32     1 S (TV (A) METAPHOR)
L33     1106 S (TELEVISION OR TV) (P) (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BO
L34     361 S (GUIDE OR SCHEDULE OR PROGRAMMING) (P) (TELEVISION OR TV) (P) (RE
L35     98 S L33 AND L34
L36     4914 S (TELEVISION OR TV) (P) (LINK OR ANCHOR OR HYPERLINK OR URL)
L37     499 S L36 AND L4
L38     1249 S (TELEVISION OR TV) (P) (LINK OR ANCHOR OR HYPERLINK OR URL) (P) (
L39     198 S L4 AND L38
L40     333 S (TELEVISION OR TV) (20A) (LINK OR ANCHOR OR HYPERLINK OR URL) (2
L41     46 S L4 AND L40
L42     20958 S (EPG OR GUIDE OR SCHEDULE OR PROGRAMMING) (P) (BOX? OR CLICK? O

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KIKINIS

L41 ANSWER 39 OF 46 USPATFULL

PI US 5812930 19980922

AI US 6780172 19960710 (8)

TI Information handling systems with broadband and narrowband communication channels between repository and display systems

PA International Business Machines Corp., Armonk, NY, United States (U.S. corporation)

DETD In accordance with some embodiments of this invention, the data display system requests files via HTTP commands over the slow, narrowband bidirectional, cellular link, and the repository system responds, perhaps at 250 Kb/sec., downloading the file on the broadband unidirectional TV link. The same model is applicable to the largely one-way cable TV system. A set-top or personal computer system (as described more fully hereinafter) requests a file over a standard telephone modem, and the download comes down a TV channel over the cable. A TV tuner/CDMA demodulator as used in the display system can bridge the cable to a standard data communications port on the computer with blazing speed.

NCL NCLM: 725/062.000

NCLS: 370/490.000; 370/493.000; 375/132.000; 375/140.000; 725/116.000;
725/131.000

KIKINIS

L41 ANSWER 37 OF 46 USPATFULL

PI US 5832223 19981103

AI US 1996-712403 19960913 (8)

TI System, method and device for automatic capture of internet access information in a broadcast signal for use by an internet access device

PA Motorola, Inc., Schaumburg, IL, United States (U.S. corporation)

SUMM Close-captioning of television programs provide URLs in an information stream with a television signal. However, close-captioning does not trigger any other action. Similarly, URLs are often displayed or read aloud on television, but are not used to trigger other automatic action. National weather radio stations (NOAA) use a tone signal that may activate radio receivers, but the signal is audible on the normal program and does not convey information beyond a simple warning.

KIKINIS

L41 ANSWER 34 OF 46 USPATFULL

PI US 5903816 19990511

AI US 1996-675636 19960701 (8)

TI Interactive television system and method for displaying web-like stills with hyperlinks

PA Thomson Consumer Electronics, Inc., Indianapolis, IN, United States (U.S. corporation)

Sun Microsystems, Inc., Palo Alto, CA, United States (U.S. corporation)

DETD At least a subset of the broadcast still video images also include associated interactive applications and/or link data which are executable to display one or more selections on the television in conjunction with the respective MPEG still. These selections may reference other MPEG stills, or may be used to order information or products. In one embodiment, one or more selections may be used to transmit a request to a media server for additional "on demand" MPEG stills.

NCL NCLM: 725/110.000

NCLS: 348/565.000; 725/037.000; 725/060.000;

725/067.000; 725/068.000; 725/122.000; 725/139.000

KIKINIS

ANSWER 29 OF 46 USPATFULL

PI US 6020880 20000201

AI US 1997-795915 19970205 (8)

TI Method and apparatus for providing electronic program guide information from a single electronic program guide server

PA Matsushita Electric Industrial Co., Ltd., Osaka, Japan (non-U.S. corporation)

AB A method and apparatus for requesting, receiving, processing, and providing information from a single source to a television viewer. An information provider is accessed via a communications link and specific data, which is separate and distinct from video signals received by the television receiver, is downloaded to the television receiver. The data provided by the information provider is database information with minimal formatting and does not contain any graphical overhead. Requests for information from the information provider may be on demand or at a predetermined time. The information provided may be filtered by the information provider and/or television receiver based on selected program categories and/or a user provided profile.

SUMM The present invention overcomes the above mentioned disadvantages by providing a method and apparatus for requesting, receiving, processing, and providing information containing substantially all of the television information for a region from a dedicated EPG server to a television viewer. First, a television receiver requests the information by accessing a local information provider via a communications link. The specific requested information is downloaded by the server to the television receiver via the communications link and is separate and distinct from video information received by the television receiver. The information provided by the server is minimally formatted and does not contain any graphical information. The received information is processed, formatted, and provided to the viewer for display on the television receiver screen.

DETD FIG. 1 is a high level block diagram of the present invention. Television receiver 100 requests EPG information from EPGS 108 through television receiver interface 104 connected to EPGS interface 110 via communications link 106. The requested information is obtained from EPGS database 112 and transmitted from EPGS 108 through EPGS interface 110 over communications link 106 to television receiver interface 104 within television receiver 100. The information is then processed and displayed to the viewer on display 102.

DETD FIG. 2 shows exemplary signal flow and control within television receiver 100. Processor 220 initiates and controls interface 204 to request information from EPGS 108 over communications link 206. When EPGS 108 responds with the requested data, interface 204 sends the data to processor 220. Processor 220, which, in this example, is part of the Closed Caption circuit (not shown), decodes and formats the data into RGB data for display. A/V switching circuit 228 is switched to connect the RGB data containing the formatted EPG data to the Video IF (VIF) 222. VIF 222 combines the received information in RGB format, as provided by the closed caption circuit, with the video RGB received from tuner 218 and forwards this combined video to Video Control Jungle (VCJ) logic circuitry 226 for display on the television receiver screen. VCJ logic circuitry 226 controls the timing of the insertion of the generated text into the active video. Processor 220 may also contain or be connected to a memory (not shown) which holds the formatted data for display on the television receiver screen. The use of a memory allows the information to be downloaded and stored as encoded data for future use instead of being displayed as it is received. Processor 224 also controls the display of

the on-screen control functions of the television receiver, such as volume level, channel number, color, tint, brightness, contrast, etc.

CLM What is claimed is:

1. Apparatus to provide a subscriber with Electronic Program Guide (EPG) information on a television receiver having an on-screen display device which is used to display control functions of the television receiver, the apparatus being for use with an Electronic Program Guide Server (EPGS), the apparatus comprising: a bi-directional communication link interconnecting the television receiver and the EPGS, a database included in the EPGS containing at least one of: a) TV schedule information for substantially all terrestrial broadcast TV stations in a predetermined area, b) TV schedule information for substantially all cable companies in the predetermined area, c) TV schedule information for substantially all satellite TV delivery services in the predetermined area, d) TV schedule information for substantially all telco TV delivery services in the predetermined area, and e) TV schedule information for substantially all other kinds of available TV service to the home in the predetermined area, selection means for selecting data from the database of the EPGS for presentation to the subscriber, requesting means in the television receiver for requesting data over the bi-directional communication link, receiving means in the television receiver for receiving the requested data over the bi-directional communication link, the requested data being separate from a video input signal received by the television receiver, and processing means for processing the data from said receiving means into data formatted for display using the on-screen display device of the television receiver, and for providing the formatted data to the on-screen display device.

NCL NCLM: 725/048.000
NCLS: 348/906.000; 725/087.000; 725/133.000|

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L9 ANSWER 163 OF 164 USPATFULL
 PI US 5027400 19910625
 AI US 1989-394786 19890816 (7)
 TI Multimedia bidirectional broadcast system
 SUMM

FIG. 3 shows an example of such a broadcasting system. This configuration includes a head end or a broadcasting station 115, which comprises, in association with a program source, a **realtime** broadcasting source 101 associated with retransmission of the conventional television broadcasting and satellite broadcasting and the broadcasting of programs resident within that station, a motion picture program data base 102 disposed to transmit in response to a request from a subscriber a motion picture program and/or still picture information to the subscriber system, a program transmitting apparatus 103, a still picture data base 104, a still picture transmitting apparatus 105, and a main control apparatus 106 for effecting communications of control information with subscribers so as to control the constituent elements above.

SUMM

FIG. 4 shows an example of the broadcast system including a head end (broadcast station) 111, which comprises, like in the case of FIG. 3, a **realtime** broadcast source 101, a motion picture data base 102, a program transmit apparatus 125, a main controller 118 for generating a **program schedule** signal 126 of the motion picture program so as to effect a charge operation of the program for the subscriber, and a modulator/mixer distributor 119 for modulating the program signal 4, the broadcast signal 6, and control signal 4 to produce a frequency multiplexed signal so as to distribute the signal to a plurality of broadcast transmission lines 5.

DRWD

FIG. 10 is a schematic diagram useful to explain a **realtime** control employing a data base control table;

DRWD

FIGS. 25A to 25F are operation timing charts useful to explain an advertisement insertion in a **realtime** broadcast operation;

DETD

FIG. 9 shows an example of index information in which there are included a 3-bit video signal classification code representing a class of an objective video signal, a 32-bit video signal identification code corresponding to a registered number of an image, which enables up to 100 million codes to be controlled for each class. Subsequently, there is recorded a 32-bit history code representing a data and time when the video image is created or modified. For frames other than a commercial video frame, the number of frames prior to a commercial insertion point is designated with an 8-bit code. When this code includes "1" in any bit positions thereof, it is assumed that the commercial is not to be inserted. As described above, since it is possible to obtain information

in a range beginning from a point prior to the commercial insertion point, a **realtime** control (associated with the advertisement insertion) can be easily coped with. In a case of a commercial video frame, the number of frames before the commercial finish point is written in the code filed. Furthermore, in order to control the number of commercial insertions, there is also disposed a field to store therein a commercial insertion point serial number.

DETD

In order to achieve a **realtime** processing of the operation above, when the number of frames prior to the commercial insertion point (commercial finish point) becomes to be equal to or less than "1111111" (255 in the decimal notation), the system starts referencing the control table 134 so as to set an initiation of the pertinent data bases to the standby state. In this situation, when the number of frames becomes to be "0", the data bases thus kept in the standby are initiated.

It is also possible to process the commercial insertion on the side of a subscriber system. FIG. 1-2 shows a configuration of means adopted for this purpose. In this system, according to an access sequence table 155 disposed in a main control unit 106, the system sends a video data commercial requested by the subscriber in association with the content of the table 155. The commercial insertion mode is defined in conformity with Table 1. In this case, however, unlike the means or embodiment 1 above, it is not necessary for the head end 115 to conduct the **realtime** data access control. Namely, the head end 115 need only

DETD

transmit a commercial associated with the video data before a point of time when the commercial is to be inserted into the video data. In addition, the various video data items are not interrupted due to the commercial insertion and hence can be successive transmitted. As a result, the head end 115 need not achieve the data access control in a **realtime** fashion; moreover, the configurations of the various transmitting apparatuses and the main control unit 106 are simplified.

DETD

FIG. 11 shows an example of index information associated with the embodiment in which there is first disposed a 3-bit classification code representing a class of an objective video signal. Subsequently, there exists a 32-bit video code corresponding to the registered number of a video image. With the provision above, it is possible to control up to 4000 million data items for each class. Next, the date and time when the video image is created or edited is recorded in a form of a 32-bit history code. For the frames other than the commercial video frame, the number of frames prior to the commercial insertion is designated with an 8-bit code. When all positions of this code is occupied by "1", it is assumed that a commercial insertion is not effected. In this fashion, since the information can be obtained in a range beginning from a point of time preceding the commercial insertion point, it is easy to cope with a **realtime** control (of the commercial insertion). In a case of the commercial video frame, the number of frames prior to the commercial finish point is loaded in the code field. Furthermore, in order to control the number of commercial insertions, there is also disposed a field of a commercial insertion point serial number.

DETD

For the **realtime** processing of the operation above, at a point of time when the number of frames (prior to a commercial finish point)

becomes to be, for example, "1111111" (255 in the decimal notation) or less, the system starts referencing the control table 155 so as to issue an initiation signal 86, thereby initiating a commercial or video data base X. At the same time, the system issues additional code information 48 including the classification code, the video identification code, the commercial mixing mode, and the commercial insertion coordinates associated with the commercial to be inserted or the video data base X such that a code adder 137 integrated with the image encoder 170 adds the additional information to an index of video data being transmitted. As for the **image** buffer, since a frame of signals of the high definition television system comprises about 3M bytes, namely, there is required 1/30 second per frame; for a 60-second commercial, it is necessary to prepare a memory having capacity of 60.times.30.times.3=5.4G bytes, which cannot be implemented by use of a semiconductor memory. In consequence, an optical disk is necessarily adopted; however, in a digital **recording** system, a compact disk available at present possesses only a storage capacity of 540M bytes and hence there may be possibly employed an analog **recording** system such as one employed in a laser disk. According to the present system, there is required a 2-head optical disk capable of effecting the write and playback operations in an independent fashion.

DETD The subscriber is allowed to access a program in this system through a **realtime** operation of a reservation. In a **realtime** access, if the number of available data bases is insufficient, a wait time is notified to the subscriber. Furthermore, in a case using the buffer system of this embodiment, the processing may be simultaneously effected for a plurality of subscribers so as to develop a high efficiency.

DETD While an access is effected on a motion picture data base, it is possible to use a playback control function 170 for various operations such as a fast forward operation, a rewind operation, a temporary stop, and a slow display, thereby achieving a remote control on the motion picture data base located in the head end 115. The function above is also available during an operation of a local video **image**

recording apparatus 133.

DETD Referring here to FIGS. 17A to 17G, description will be given of a down load operation effected only by use of a single channel. A program and a commercial selected by a particular subscriber "a" are sequentially transmitted via the modulator/mixer distributor 119 to the subscriber "a" by use of a free channel not used for the own broadcasting operation and for the retransmission. At the same time, through another channel (dedicated to down-link control information), there is transmitted control information "user a open" to initiate the video recorder 133 of the subscriber terminal 120, thereby **recording** the programs and commercials. When the program is finished, a stop signal "user a close" is delivered to terminate the operation of the video recorder 133. After the program of the subscriber "a" undergoes a down load operation, there is achieved the similar operation so as to sequentially conduct the down load operation of the desired programs and

commercials for the subscribers "b", "c", etc. According to the content of Table 1, the commercial is not to be inserted for the subscriber "b". In this fashion, the subscriber system 120 receives a program RF (high frequency) signal 22 and a terminal control RF signal 8 at the same time.

DESCRIPTION will now be given of a sequence control of the down load signals in the head end 117. First, like in the case of the embodiment 1, each image data is provided with index information shown in FIGS. 7 to 9. In addition, in the main control unit 105 of the head end 117, there is disposed a data base control table 134 of FIG. 10, which is similar to that employed in the embodiment 1. With the provisions above, the sequence control can be achieved in a **realtime** fashion. The content of the table 134 is updated or rewritten with up-link control information.

Furthermore, it is impossible for the means above to cope with **realtime** broadcast sources such as news programs and various events.

In a case where a video tape recorder is adopted as the recorder, there is required several seconds to set a **recording** state because of preparations such as a tape loading operation. In consequence, at a point of several hundred frames prior to the start of data associated with a commercial or a program, there is disposed a record standby frame of FIG. 23A, so that locations of each frame are loaded, as shown in FIGS. 7 and 8, with index information items of FIG. 23C. By monitoring the index it is possible to connect to determine the commercial start point. Similarly, a record standby frame may be disposed in the program. Incidentally, the index monitor operation is initiated by an instruction supplied from the down-link control information channel.

With the provision of the construction above, it is possible to cope with such programs requiring a **realtime** feature as a news program and a sport program. FIGS. 25A to 25F show signal timing charts in a data transfer method employed in this system. In this case, there are disposed a **realtime** broadcast channel without a commercial insertion and a **realtime** broadcast channel with a commercial insertion. The channel with the commercial insertion is provided with a commercial field of a predetermined period of time associated with a spot commercial such that a subscriber desiring a commercial insertion inserts a commercial beforehand loaded therein through a down load operation. The subscriber "a", who does not effect a commercial insertion, receives signals from the **realtime** broadcast channel without a commercial insertion.

In the embodiment above, the channels are respectively allocated to the control information, program down load, and commercial down load in a fixed fashion. In actual operations, however, the channel dedicated to the **realtime** broadcast is not used, for example, in the midnight. Furthermore, when requests such as retrieval operations of commercials are increased, it is necessary to additionally install channels for the commercial. In this fashion, when the data traffic changes in a dynamic manner, it is desired that the system also copes with such a dynamic change.

DETD

FIG. 26 shows an example of the channel sharing. Assume here that N channels are allocated to **realtime** broadcast operations, that there arise m down load requests, that p commercials are to be inserted therein, and q communications are effected with subscriber systems.

DETD

First, the **realtime** broadcast is preferentially assigned, and hence, as shown in FIG. 25, two types of broadcast channels including a channel without a commercial and a channel with a commercial are required to be allocated for each broadcast program; in consequence, 2N channels ranging from channel 1A to NB are to be occupied for this purpose. Next, for the control information items requiring a smaller amount of transfer capacity, there are assigned Q channels which satisfy the following relationship. ##EQU1# where, Di (bps) indicates a communication speed of i-th control data and Dc is a communication speed of a cable television channel. In contrast to the transmission speed of Di set to several hundred bits per second (bps), the transmission speed of Dc is several millions bps; in consequence, the ten thousand communications may be handled only with one Dc channel.

DETD

Subsequently, the remaining channels are allocated to the down load operations, which are executed beginning from the first requested down load operation. In addition, the processing is scheduled in any situation so that a commercial is delivered prior to a program. This rule is to be observed when there is executed a commercial insertion into a **realtime** broadcast; namely, this condition is indispensable in the case above. As a result, as shown in FIG. 26, M channels and P channels are allocated to the program down load and the commercial down load, respectively.

DETD

In this system, there are disposed such additional components as a visual command memory 150 for enabling the visual operation to be achieved in the subscriber system 116, a frame memory 151 for storing therein still picture screens such as operation screens, a graphic processor 141 for updating the content of the frame memory 151, and a data memory 140 and a program memory 139 associated with the processor 141.

DETD

In the head end 115, there are disposed an application program data base 185 containing procedures to provide various services and a program transmitter 186 for retrieving the procedures for a transfer thereof; whereas the subscriber system 116 includes an image processing engine 187 for effecting time-consuming 3-dimensional graphics processing and the like, various accelerators (processors) 188 for supporting **realtime** number crunching processing such as a product simulator processing, which will be described later, and an external communication port 189 for effecting bidirectional communications with a commercial sponsor, a sales agent, a travel agent, a government agency, etc.

DETD

Simple screen operations such as the shift and drag of the icon 29 can be executed by use of the **graphic** processor 141 of the subscriber system 116. The video data of the product is stored, through a down load operation, in the frame memory 151 and the data memory 140; moreover, in order to implement visual **commands** by means of the icon 29, the coordinates on the monitor display screen and the corresponding **commands** are stored in the visual

command memory 150 through a down loading.

DETD

Since the **realtime** number crunching digital video signal processing cannot be executed by the processor 141 of the subscriber system 116, an access is made to an accelerator 188 dedicated a digital video signal processing in the head end 117.

DETD

FIGS. 30A and 30B show another operation of the embodiment 8. As shown in FIG. 30A, when the icon 29 is moved to a portion which is at a position other than positions associated with the coordinates registered to the visual command memory 150, for example, those of the operator's panel and the electronic viewfinder and which belongs to the product, there is shown an **image**, as indicated by the hand 46, in which the product is held by the hand. In this state, if the icon 29 is dragged, the product is rotated according to the movement of the icon 29, which enables the product to be viewed from an arbitrary angle. In addition, in order to operate the product from a desired angle, the contents of the data memory 140 and the visual command memory 150 are updated depending on the rotated **image** of the product. If the 3-dimensional rotate processing (such as a ray tracing) is time consuming, it may also be possible to use the **image** processing engine 187 of the head end 117. Simple processing such as an affine transformation to obtain a magnified **image** of a product can be coped with by means of the **graphic** processor 141 of the subscriber system 116.

DETD

The visual command memory 150 is configured as a combination of a content addressable memory and a 2-dimensional bit map memory as shown in FIG. 34. The content addressable memory is supplied, through a down load operation, with coordinate data (X_{pi} , Y_{pi}) defined for the functions (the electronic viewfinder, the operator's panel, etc.) described above, effective pointing region (W_i , H_i) centered on each of the coordinate data where the pointing is effective, access objects (the respective components of the local **graphic** processor and the head end), access addresses, transfer parameters such that the content addressable memory undergoes a search operation for a **command** corresponding to the input coordinates in an associative fashion. If the pertinent coordinates are not found in the memory 150, the coordinates are transferred to the 2-dimensional bit map memory. The memory addresses of the 2-dimensional bit map memory are assigned in association with the coordinates on the screen, and data thereof include binary information indicating whether or not screen data of a product is present at a position represented by the associated coordinates. If the data is present in association with the input coordinates, the system initiates the 3-dimensional rotation program.

DETD

However, the message may be complicated for the unexperienced old persons, ladies, or children who are unfortunately not so familiar with the system. To overcome this difficulty, like in the case of the telephone system, the subscriber may be supplied with a **realtime** telephone operator's answer as shown in FIG. 36B. In this case, the voice of the subscriber and the screen thereof are transmitted to the operator.

DETD

With reference to FIGS. 37 and 1-5, description will be given of the

embodiment 10. In the configuration of FIG. 37 showing the content of the subscriber support apparatus, the text message is processed by use of the support information data base and the support information transmitter. The information includes video/audio information, which is sent via the multiplexer to the image encoder 193.

Incidentally, the information selection is conducted depending on the content of the visual command memory 150 in the subscriber system 154 (FIG. 32) such that the command is transmitted as control information 4 to the subscriber support information transmitter of FIG. 37.

In the subscriber system, a video signal produced by means of a video tape recorder or an optical disk or a realtime video signal generated by a camera of the subscriber is encoded by use of the encoder 200 so as to send the resultant signal to the head end. On receiving the signal, the head end once records the video signal in a video mail file 198 to control the signal, by means of a video mail control unit 199, as a personal mail, a message to a particular group, or an electronic bulletin board.

CLM What is claimed is:

4. A multimedia bidirectional broadcast system according to claim 1 wherein in a free area of a motion picture frame or a still picture frame, there is recorded particular coordinates in an image and a command associated therewith such that data of the coordinates and the command are transferred, in a playback operation, to a visual command memory disposed as a content addressable memory so as to set a cursor to said coordinates and to instruct an execution of the command, thereby reading out the command from the content addressable memory.

31. A multimedia bidirectional broadcast system according to claim 20 wherein in a free area of a motion picture frame or a still picture frame, there is recorded particular coordinates in an image and a command associated therewith such that data of the coordinates and the command are transferred, in a playback operation, to a visual command memory disposed as a content addressable memory so as to set a cursor to said coordinates and to instruct an execution of the command, thereby reading out the command from the content addressable memory so as to execute the command to initiate a graphic processor in the subscriber system.

38. A multimedia bidirectional broadcast system according to claim 28 further including means for preparing a channel without a commercial and a channel having a commercial field of a predetermined period of time for programs requiring a realtime feature such as a new program, a sport program, an event program, and a weather forecast program such that a commercial which is accommodated by us of the commercial channel and which conforms to a commercial setting environment of a subscriber is stored, through a down load operation by use of a separate commercial dedicated line, in a video recorder or a motion picture recorder

dedicated to a commercial in each said subscriber system so as to insert the commercial in the commercial time field.

43. A multimedia bidirectional broadcast system according to claim 20 further including a traffic monitor/channel exchange control unit and a channel exchange for monitoring a traffic of a **realtime** broadcast and a down load broadcast so as to effect an optimal allocation of dedicated channels.

NCL

NCLM: 725/116.000

NCLS: 380/211.000; 380/242.000; 725/032.000; 725/134.000 |

L13 ANSWER 11 OF 13 USPATFULL

PI US 5931908 19990803

AI US 1996-773263 19961223 (8)

TI Visual object present within live programming as an actionable event for

user selection of alternate programming wherein the actionable event is selected by human operator at a head end for distributed data and programming

PA The Walt Disney Corporation, Burbank, CA, United States (U.S.

corporation)

SUMM The present invention provides a method and apparatus for

linking real-time data with audiovisual

content to enable a user to make selections, manipulate data, and to execute functions interactively through an audiovisual display unit based upon audiovisual content being displayed at the current time. Put another way, audiovisual content is presented in synchronization with selected overlay functions so that the user has the ability to interact with the audiovisual content by performing said overlay functions associated with selected events that occur in the programming ("actionable events").

SUMM

A method and apparatus are provided to make overlay functions available to the user through the audiovisual display during the actionable events that occur in programming being viewed by the user. A user interface for each overlay function that may be performed, which user interface may or may not be visible to the user, is overlaid on and synchronized with the programming being shown. Interaction with selections may be made using any of several known methods such as a screen menu or a cursor controlled by a remote control device. For example, while viewing a movie starring a famous celebrity, the set of overlay functions may include the ability to retrieve in an overlay window a list of recent movies starring the celebrity by selecting the celebrity's name during the opening credits of the movie, or whenever the celebrity appears on the audiovisual display. In some instances, a visible cue may exist to indicate that a function may be performed, such as a visible graphical outline appearing on the audiovisual display around an item that may be selected. As another example, during a football program, a user may be able to retrieve a team roster by selecting the name of a team when shown, or the career statistics of a player by selecting that player. As another example, while viewing a television program which reviews current movies, a user would have the ability to access an Internet World Wide Web site for a given movie by making a selection while that movie is being reviewed. As another example, the present invention may be used to implement an audiovisual program guide that allows a user to select programming being shown at the time by

giving the user the ability to select one of several areas on the user's television screen, with each of the several areas displaying a different program that is available to the user at the time.

In the present invention, a set of overlay functions ("overlay function set") is associated with each program to be shown to users. The overlay functions could include a variety of retrievable information and interactive functions that will be available to the user while the user is viewing the program. Each program may have unique overlay function sets since the overlay functions made available are based upon the unique content of each program. For each actionable event in a program, the operator will determine the overlay function set that will be made available to the user, and the characteristics of the interface that will both present the availability of the overlay functions to the user and allow the user to access the overlay functions. Overlay function sets and interface data for a plurality of programs are stored in memory. When a program having overlay function sets and interface data associated with it is sent by the source provider to a user (whether requested on demand, shown at a pre-determined time, or otherwise), the overlay function sets and interface data for the program, which may also be sent by the source provider, are synchronized with the program and loaded into the **set-top box**. The processor in the **set-top box** reads the overlay function set and interface data and then both implements the interface and enables the overlay functions in real time and in synchronization with the associated actionable event in the programming. As the user interacts with the program through the synchronized interface, the **set-top box** implements the relevant overlay functions selected by the user. Alternatively, the **set-top box** may communicate with the source provider as necessary to implement certain overlay functions selected by the user.

KIKINIS

L16 ANSWER 29 OF 31 USPATFULL
PI US 5528304 19960618
A1 US 1994-278784 19940722 (8)
TI Picture-in-picture feedback for channel related features
PA Zenith Electronics Corp., Glenview, IL, United States (U.S. corporation)
CLM What is claimed is:

1. A television receiver having: A) a picture-in-picture (PIP) display; B) a main display; C) an on-screen display for the selection of channel-related functions; D) means for displaying the on-screen display with a channel table of channel choices and with a cursor manipulatable to select different channels from the channel table; and E) means for automatically changing a signal routed to the P-I-P display when the cursor of the on-screen display is manipulated to a different channel to thereby display the different channel in the P-I-P display concurrently with said channel table.

2. A television receiver comprising: A) means for generating a main display from a main display signal; B) P-I-P means for generating a picture-in-picture display; C) means for generating an on-screen menu display with a table of channel choices for the selection of channel-related functions; D) means for selecting channels on which the channel-related functions operate; E) first switch means for blanking the main display when said on-screen menu displays are generated; F) second switch means for routing the main display signal to the P-I-P means such that the main display signal is generated in the Picture-In-Picture display; and G) means for changing the signal input to the P-I-P means in correspondence with a changed selection of channels by the means for selecting, whereby as a channel is selected from the channel table, the selected channel is displayed in the Picture-In-Picture display concurrently with the display of the channel table.

3. A television receiver having: A) a main display circuit, B) an on-screen menu display circuit, C) a picture-in-picture (P-I-P) display circuit; D) the on-screen menu display circuit having a table of channel choices and a cursor manipulatable to select a channel from said table for channel-related functions; E) switch means for transferring a main display signal to the P-I-P display circuit; F) a tuner for receiving broadcast signals and selecting the main display signal from said broadcast signals; and G) tuner control means for changing the broadcast signal selected; H) means for routing the main display signal from the main display circuit to the P-I-P display circuit in response to a displaying of the on-screen menu display, I) means for displaying the main display signal in a P-I-P display concurrent with the on-screen

menu display, and J) means for operating the tuner control means to change the main display signal routed to the P-I-P display circuit to accord with the main display signal selected by the manipulatable cursor.

4. The television receiver according to claim 3 further comprising means for blanking the main screen display when said main display signal is routed from the main display circuit to the P-I-P display circuit.

5. The television receiver according to claim 4 wherein the means for blanking further includes an input switch, the input switch capable of connecting the main display circuit to a nonexistent or grounded signal source.

6. The television receiver according to claim 3 wherein the means for changing the channel signal further includes a system controller microprocessor in the television receiver which controls the tuner and the on-screen menu display.

7. The television receiver of claim 3 further comprising means for blanking the audio output of the receiver when the main display signal is routed from the main display circuit to the P-I-P display circuit.

L16 ANSWER 27 OF 31 USPATFULL
 PI US 5559550 19960924
 AI US 1995-421385 19950413 (8)
 TI Apparatus and methods for synchronizing a clock to a network clock
 PA Gemstar Development Corporation, Pasadena, CA, United States (U.S. corporation)

DETD

An operating program for microprocessor 1284 is stored in a read only memory (ROM) 1286. A viewer input device 1288, preferably in the form of a remote controller 1310, as shown in FIG. 8B, is coupled to microprocessor 1284 to provide commands from the viewer. A video processor 1296 is coupled to microprocessor 1284. When the viewer wishes to see television program listings, the viewer presses GUIDE/TV button 1312 on remote controller 1310 and the microprocessor 1284 recalls a portion of the program schedule data base from memory 1282 and couples it to video processor 1296, where the program listings are formatted for display. Preferably, the information stored in video processor 1296 is a bit map of what is displayed on the screen of television monitor 1280. Video processor 1296 is connected to another input of PIP chip 1279. Preferably, input device 1288 controls microprocessor 1284 by cursor movement on the screen of television monitor 1280. To this end, microprocessor 1284 and video processor 1296 are coupled to a cursor position register 1298. Alternatively, the viewer can select items of information displayed on the screen by keying numbers assigned to these items into viewer input device 1288. Microprocessor 1284 is also coupled to tuner 1272 for changing channels and to PIP chip 1279 for selection of the mode of PIP operation. The microprocessor is also connected to IR transmitter 1285 for sending commands to a VCR, cable box, and/or satellite receiver. For example, the commands can be channel timing commands.

DETD

The format of an electronic program guide according to the present invention is shown in FIG. 9. The format has a background area 1250 and an overlaid PIP window 1252 in the upper left-hand corner of the screen. The real time, i.e., 6:16 p.m., is displayed in a sub-area 1252a of PIP window 1252. Background area 1250 includes a banner and message prompting area 1253 at the top of the screen, a program description area 1254 in the upper right-hand corner of the screen adjacent to PIP window 1252, and a program schedule area 1255 below areas 1252 and 1254. Program description area 1254 includes the start time and length (duration) of the program being described, as shown by program description 1300 for program 1292 in FIG. 10. The viewer can move a cursor 1258 vertically to highlight one of the program listings displayed in area 1255. The highlighted background of cursor 1258 and the background of program

description area 1254 are the same color or shade. The **real time** moving images of a currently broadcast television program and the current time are displayed in PIP window 1252 and the audio portion of the television program displayed in PIP window 1252 is reproduced by the television sound system.

DETD In FIG. 11A, a channel specific **program guide** (CSPG) screen format is shown, which is another format of the electronic

program guide that can be provided with the apparatus of FIG. 8A. All the program listings for a selected channel, i.e., FOX Channel 7, are displayed in area 1255, from the currently broadcast program 1259 into the future for a specified time period, e.g., 24 hours or until the end of the day. Area 1255 has a column for time and a column for program title. Each line of area 1255 represents a separate program listing. The moving, **real time** images of the current television program are displayed in PIP window 1252. If the cursor also highlights the current program, a brief program description of the current program is displayed in area 1254. If the cursor highlights another program listing, such as listing 1258, a brief program description of the highlighted program is displayed in area 1254 and the current program is identified in banner 1259 by time and title. Since the year, month and day of the month are known, the

DETD **program schedule** for the correct day can be accessed from memory and displayed in area 1255. If the user tunes to channel 7,

then all the program listings for the selected channel, e.g., FOX Channel 7, are displayed in area 1255. Area 1255 has a column for time and a column for program title and each line of area 1255 represents a separate program listing. The moving, **real time** images of the current television program on the selected channel are displayed in PIP window 1252. Since the time on clock 1292 may be incorrect, the time displayed in subarea 1252a may be incorrect. Suppose for example, that the **real time** is 6:16 P.M., but that the time on clock 1292 is 5:10 P.M. Then the time shown in subarea 1252a, which is read from clock 1292, is displayed as 5:10 P.M., as shown in FIG. 11B. The goal of the clock setting mode is to properly set clock 1292 and to synchronize the clock 1292 setting to the network clock. In this case the network clock is the clock used by FOX channel 7 for starting and stopping programs.

NCL NCLM: 725/041.000

NCLS: 348/906.000; 368/046.000; 386/046.000; 386/083.000;
725/043.000

KIKINIS

L19 ANSWER 39 OF 41 USPATFUL

PI US 5528304 19960618

AI US 1994-278784 19940722 (8)

TI Picture-in-picture feedback for channel related features

PA Zenith Electronics Corp., Glenview, IL, United States (U.S. corporation)

DRWD FIG. 7 shows an on-screen programming guide with a

real-time P-I-P display according to the present invention.

DETD As seen in FIG. 7, an on-screen program guide (OSPG) menu 77

lists a segment of a current television program listing in a typical graphic format. The OSPG is controlled through a separate

microprocessor 79 (FIG. 1) as known in the art. The operator can cursor through the program listing to highlight a certain program, in this case that of channel twenty, in order to learn more about the program, select it for recording, etc. In order to enhance the utility of the

OSPG menu 77 according to the present invention, when the operator has selected a program listing that corresponds to the present time 81, the tuner 21 will be switched to the channel highlighted and that signal will be fed to the P-I-P circuitry 20 through control of the input switch 64 in order that the operator will be able to see the present

programming in the P-I-P window 60 to further enhance his selection criteria. The main screen display is preferably blanked although this is not as important to operator ergonomics in the present situation as in those previously cited because the program listing 77 is a solid field occupying most of the screen

NCL NCLM: 725/041.000

NCLS: 348/563.000; 725/057.000; 725/059.000

KIKINIS

L19 ANSWER 37 OF 41 USPATFULL
PI US 5559550 19960924
AI US 1995-421385 19950413 (8)
TI Apparatus and methods for synchronizing a clock to a network clock
PA Gemstar Development Corporation, Pasadena, CA, United States (U.S. corporation)

DETD To operate the instant programmer 300 or the custom programmer 500 for recording programs on the VCR, the VCR should be left OFF and the cable box ON. The user looks up in the television guide the compressed code for the program, which he/she wishes to record. The compressed code 212 is listed in the television guide, as shown in FIG. 4. The compressed code 212 for the program selected by the user is entered into the instant programmer 300 or the custom programmer 500 by using the number keys 302 and then the user selects how often to record the program. The user presses the ONCE key 310 to record the program once at the scheduled time, or the user presses the WEEKLY key 308 to record the program every week at the same scheduled time until cancelled or the user presses the DAILY (M-F) key 312 to record the program each day Monday through Friday at the same scheduled time until cancelled. This is most useful for programs such as soapbox operas that air daily, but not on the weekend. To confirm the entry, the instant programmer 300 will immediately decode the compressed code and display the date, channel and start time of the program entered by the user. The length of the entered program is also displayed by time bars that run across the bottom of the display. Each bar represents one hour (or less) of program.

DETD An operating program for microprocessor 1284 is stored in a read only memory (ROM) 1286. A viewer input device 1288, preferably in the form of a remote controller 1310, as shown in FIG. 8B, is coupled to microprocessor 1284 to provide commands from the viewer. A video processor 1296 is coupled to microprocessor 1284. When the viewer wishes to see television program listings, the viewer presses GUIDE/TV button 1312 on remote controller 1310 and the microprocessor 1284 recalls a portion of the program schedule data base from memory 1282 and couples it to video processor 1296, where the program listings are formatted for display. Preferably, the information stored in video processor 1296 is a bit map of what is displayed on the screen of television monitor 1280. Video processor 1296 is connected to another input of PIP chip 1279. Preferably, input device 1288 controls microprocessor 1284 by cursor movement on the screen of television monitor 1280. To this end, microprocessor 1284 and video processor 1296 are coupled to a cursor position register 1298. Alternatively, the viewer can select items of information displayed on

the screen by keying numbers assigned to these items into viewer input device 1288. Microprocessor 1284 is also coupled to tuner 1272 for changing channels and to PIP chip 1279 for selection of the mode of PIP operation. The microprocessor is also connected to IR transmitter 1285 for sending commands to a VCR, cable box, and/or satellite receiver. For example, the commands can be channel timing commands.

DETD

The format of an electronic program guide according to the present invention is shown in FIG. 9. The format has a background area 1250 and an overlaid PIP window 1252 in the upper left-hand corner of the screen. The real time, i.e., 6:16 p.m., is displayed in a sub-area 1252a of PIP window 1252. Background area 1250 includes a banner and message prompting area 1253 at the top of the screen, a program description area 1254 in the upper right-hand corner of the screen adjacent to PIP window 1252, and a program

schedule area 1255 below areas 1252 and 1254. Program description area 1254 includes the start time and length (duration) of the program being described, as shown by program description 1300 for program 1292 in FIG. 10. The viewer can move a cursor 1258 vertically to highlight one of the program listings displayed in area 1255. The highlighted background of cursor 1258 and the background of program description area 1254 are the same color or shade. The real time moving images of a currently broadcast television program and the current time are displayed in PIP window 1252 and the audio portion of the television program displayed in PIP window 1252 is reproduced by the television sound system.

DETD

In a program selection mode, as the viewer moves cursor 1258 vertically from program listing to program listing in area 1255 of FIG. 9, the current television program displayed in window 1252 and the program description displayed in area 1254 automatically change accordingly to match the highlighted program in area 1255. As the cursor moves from one program listing to another, tuner 1272 is set to the channel for the highlighted program listing and/or commands are sent to a cable box, VCR or satellite receiver to change channels, so that the program can be displayed in PIP window 1272. The microprocessor 1284 recalls the program description for the highlighted listing from program schedule memory 1282, and video processor 1296 formats this program description so it can be displayed in area 1254.

DETD

In FIG. 11A, a channel specific program guide (CSPG) screen format is shown, which is another format of the electronic program guide that can be provided with the apparatus of FIG. 8A. All the program listings for a selected channel, i.e., FOX Channel 7, are displayed in area 1255, from the currently broadcast program 1259 into the future for a specified time period, e.g., 24 hours or until the end of the day. Area 1255 has a column for time and a column for program title. Each line of area 1255 represents a separate program listing. The moving, real time images of the current television program are displayed in PIP window 1252. If the cursor also highlights the current program, a brief program description of the current program is displayed in area 1254. If the cursor

highlights another program listing, such as listing 1258, a brief program description of the highlighted program is displayed in area 1254 and the current program is identified in banner 1259 by time and title. Since the year, month and day of the month are known, the

program schedule for the correct day can be accessed from memory and displayed in area 1255. If the user tunes to channel 7, then all the program listings for the selected channel, e.g., FOX Channel 7, are displayed in area 1255. Area 1255 has a column for time and a column for program title and each line of area 1255 represents a separate program listing. The moving, **real time** images of the current television program on the selected channel are displayed in PIP window 1252. Since the time on clock 1292 may be incorrect, the time displayed in subarea 1252a may be incorrect. Suppose for example, that the **real time** is 6:16 P.M., but that the time on clock 1292 is 5:10 P.M. Then the time shown in subarea 1252a, which is read from clock 1292, is displayed as 5:10 P.M., as shown in FIG. 11B. The goal of the clock setting mode is to properly set clock 1292 and to synchronize the clock 1292 setting to the network clock. In this case the network clock is the clock used by FOX channel 7 for starting and stopping programs.

NCL

NCLM: 725/041.000

NCLS: 348/906.000; 368/046.000; 386/046.000; 386/083.000;

725/043.000

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Class 725 INTERACTIVE VIDEO DISTRIBUTION SYSTEMS[Click here to view a PDF version of this file](#)

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- Dunn

- Aristides

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- 1 BILLING IN VIDEO DISTRIBUTION SYSTEM
- 2 .. Data stored locally (e.g., at set-top box)
- 3 .. On nonelectronic medium (e.g., paper tape or meter)
- 4 ✓ .. Data stored at intermediate point (i.e., at location between headend or server and receiver)
- 5 .. Payment method or scheme
- 6 .. Card reader (e.g., reader for credit, debit, or smart card)
- 7 .. Coin operated
- 8 .. Having variable cost or free preview period
- 9 USE SURVEYING OR MONITORING (E.G., PROGRAM OR CHANNEL WATCHED)
- 10 .. Monitoring physical reaction or presence of viewer
- 11 .. With entry of user identification
- 12 .. By passive determination and measurement (e.g., by detecting motion or ambient temperature, or by use of video camera)
- 13 .. Manual entry (e.g., using keypad or by written response)
- 14 .. By passively monitoring receiver operation
- 15 .. By detecting local oscillator or IF signal
- 16 .. By polling
- 17 .. By monitoring sync or blanking pulse
- 18 .. By use of audio signal
- 19 .. By use of pattern recognition or signature
- 20 .. By data encoded in video signal (e.g., VBI data)
- 21 .. Combined with detecting VCR operation
- 22 COMMERCIAL OR PROGRAM AIRING VERIFICATION SYSTEM
- 23 SYSTEM FOR AWARDING COUPON, TOKEN, OR CREDIT
- 24 INTERACTIVE OPINION POLLING
- 25 ACCESS CONTROL OR BLOCKING
- 26 .. By mechanical lock
- 27 .. Of specific channel
- 28 .. Of specific program (e.g., based on program rating)
- 29 .. Time dependent (e.g., time spent viewing program, time of day, etc.)
- 30 .. Access via PIN or password
- 31 .. With encryption or scrambling of video signal
- 32 PROGRAM, MESSAGE, OR COMMERCIAL INSERTION OR SUBSTITUTION
- 33 .. Emergency warning
- 34 ✓ .. Specific to individual user or household
- 35 .. Based on demographics or geographical area
- 36 .. Insertion of local commercial or local program at headend or network affiliate
- 37 OPERATOR INTERFACE
- 38 .. To facilitate tuning or selection of video signal
- 39 .. Electronic program guide
- 40 ... For displaying additional information
- 41 Video still or clip
- 42 Commercial or advertisement
- 43 With separate window, panel, or screen
- 44 Content arrangement
- 45 Based on genre, theme, or category
- 46 Based on personal preference, profile, or viewing history (e.g., to produce redacted listing)
- 47 User customization of display content
- 48 ✓ ... Combined from plural information providers (e.g., combined terrestrial and satellite sources)
- 49 Combined at local receiver
- 50 Information updating
- 51 Having link to external information resource (e.g., online resource)

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37-56

- 52 ... Navigational feature
- 53 ... Searching (e.g., by title or actor's name)
- 54 ... Transmission scheme
- 55 ... Provided on recordable medium
- 56 .. Channel guide (i.e., channel-specific as opposed to program-specific guide)
- 57 .. Tune-by-label (i.e., channel selection by alphanumeric character entry)
- 58 .. Program reserve or reminder system
- 59 .. Selecting from multiple inputs or sources
- 60 . Interactive product selection
- 61 . Interactive program selection
- 62 **CELLULAR VIDEO DISTRIBUTION SYSTEM**
- 63 **SATELLITE VIDEO DISTRIBUTION SYSTEM**
- 64 . Two-way
- 65 .. Return path
- 66 ... Terrestrial return path
- 67 . Transmitter
- 68 . Receiver
- 69 .. Polarization of signal
- 70 .. For digital signal
- 71 .. For providing signals to plural subsequent receivers
- 72 .. Antenna initialization, calibration, or aiming
- 73 **TERRESTRIAL MICROWAVE VIDEO DISTRIBUTION SYSTEM**
- 74 **LOCAL VIDEO DISTRIBUTION SYSTEM**
- 75 . Vehicle
- 76 .. Airplane
- 77 ... Seat-back terminal
- 78 . Multiunit or multiroom structure (e.g., home, hospital, hotel, office building, school, etc.)
- 79 .. Using existing power network
- 80 .. Coordinating diverse devices
- 81 .. Using wireless link
- 82 .. Local server or headend
- 83 .. Having additional amenity (e.g., access to outside network, room service, etc.)
- 84 .. Combined with call bell system for hospital use
- 85 .. Receiver
- 86 **USER-REQUESTED VIDEO PROGRAM SYSTEM**
- 87 . Video-on-demand
- 88 .. VCR-like function
- 89 ... By use of memory at receiver
- 90 ... With particular transmission scheme (e.g., transmitting I-frames only)
- 91 .. Server or headend
- 92 ... Mass storage
- 93 ... Control process
- 94 Buffering and switching
- 95 Channel or bandwidth allocation
- 96 In accordance with server or network congestion
- 97 Scheduling (e.g., grouping users together)
- 98 .. Transmission network
- 99 ... Using telephone network
- 100 .. Receiver (e.g., set-top box)
- 101 . Near video-on-demand system (i.e., providing plural, time-staggered versions of same program)
- 102 .. VCR-like function
- 103 .. Server or headend
- 104 . Pay-per-view
- 105 **VIDEO DISTRIBUTION SYSTEM WITH UPSTREAM COMMUNICATION**
- 106 . Telephony via television distribution network
- 107 . Remote testing of cable system
- 108 . Alarm system using television network
- 109 . Having link to external network (e.g., interconnected computer network)
- 110 .. Connection to external network at receiver (e.g., set-top box)
- 111 .. Cable modem
- 112 .. Link transmission (e.g., URL sent to user)

- 113 ... Conveyed in video image
- 114 .. Server or headend
- 115 .. Data storage or retrieval
- 116 .. Control process
- 117 .. Communications interface
- 118 .. Transmission network
- 119 .. Having significant intermediate network unit (e.g., hub, substation, etc.)
- 120 ... With two-way connection from unit to receiver (e.g., for the purpose of channel selection)
- 121 .. Return path
- 122 ... Return path via telephone network
- 123 ... Wireless return path
- 124 ... Noise in return path
- 125 Ingress noise
- 126 .. Detail of use of two-way spectrum
- 127 .. Network component (e.g., filter, tap, splitter, amplifier, repeater, etc.)
- 128 ... Diplex filter
- 129 .. Hybrid fiber-coax network
- 130 .. Power signal over network
- 131 .. Receiver (e.g., set-top box)
- 132 .. Programmable or upgradeable
- 133 .. With diverse device (e.g., personal computer, game player, VCR, etc.)
- 134 .. Having particular storage feature
- 135 VIDEO DISTRIBUTION SYSTEM WITH LOCAL INTERACTION**
- 136 .. Interactive data transmitted in video signal band (e.g., VBI or HBI data)
- 137 .. Teletext
- 138 .. Headend
- 139 .. Receiver (e.g., set-top box)
- 140 .. Programmable or upgradeable
- 141 .. With diverse device (e.g., personal computer, game player, VCR, etc.)
- 142 .. Having particular storage feature
- 143 VIDEO DISTRIBUTION SYSTEM COMPONENTS**
- 144 .. Headend
- 145 .. Data storage or retrieval
- 146 .. Control process
- 147 .. Communications interface
- 148 .. Transmission network
- 149 .. Network component (e.g., filter, tap, splitter, amplifier, repeater, etc.)
- 150 .. Power signal over network
- 151 .. Receiver (e.g., set-top box)
- 152 .. Programmable or upgradeable
- 153 .. With diverse device (e.g., personal computer, game player, VCR, etc.)

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- 14.01 TWO-WAY VIDEO AND VOICE COMMUNICATION (E.G., VIDEOPHONE)
- 14.02 . Over wireless communication
- 14.03 . User interface (e.g., touch screen menu)
- 14.04 . Operating with other appliance (e.g., TV, VCR, FAX, etc.)
- 14.05 . Remote control
- 14.06 . Answering machine
- 14.07 . Display arrangement (e.g., multiscreen display)
- 14.08 . Conferencing (e.g., loop)
- 14.09 .. Conferencing with multipoint control unit
- 14.1 .. Motion image conferencing
- 14.11 . Switching
- 14.12 . Transmission control (e.g., resolution or quality)
- 14.13 .. Compression or decompression
- 14.14 .. Still frame (e.g., freeze frame)
- 14.15 .. Field or frame difference (e.g., moving frame)
- 14.16 . User positioning (e.g., parallax)
- 21 PLURAL TRANSMITTER SYSTEM CONSIDERATIONS (E.G., INTERFERENCE REDUCTION)
- 22 SLOW SCANNING TRANSMISSION (E.G., STILL FRAME)
- 23 . Color TV
- 24 PLURAL STILL IMAGES OVER CONVENTIONAL CHANNEL
- 25 IMAGE FALSIFICATION TO IMPROVE VIEWER PERCEPTION OF SELECTIVE OBJECT (E.G., MOVING OBJECT OR TARGET)
- 26 . Contour generator
- 27 . Quantizer
- 28 . Selective contrast expander
- 29 . False color
- 30 .. Hue expander
- 31 BACK SCATTER REDUCTION
- 32 PSEUDO COLOR
- 33 . Multispectral to color conversion (e.g., infrared and visible, infrared bands, etc.)
- 34 . Including intensity to color conversion (e.g., colorizer, etc.)
- 35 PSEUDO BLACK AND WHITE
- 36 PANORAMIC
- 37 . With continuously rotating element
- 38 . Multiple channels
- 39 . With observer selected field of view
- 40 HOLOGRAPHIC
- 41 . Color TV
- 42 STEREOSCOPIC
- 43 . Signal formatting
- 44 . Pseudo
- 45 . Endoscope
- 46 . Picture signal generator
- 47 .. Multiple cameras
- 48 ... More than two cameras
- 49 .. Single camera with optical path division
- 50 .. Single camera from multiple positions
- 51 . Stereoscopic display device
- 52 .. More than two display devices
- 53 .. Viewer attached
- 54 .. Single display with optical path division
- 55 ... Separation by time division

<u>56</u>	.... With alternating shutters
<u>57</u>	.... With alternating polarization
<u>58</u>	... Separation by polarization
<u>59</u>	... Separation by lenticular screen
<u>60</u>	... Separation by color (i.e., anaglyphic)
<u>61</u>	SPECIAL APPLICATIONS
<u>62</u>	. Aid for the blind
<u>63</u>	.. Image magnifying
<u>64</u>	. Combined electronic sensing and photographic film cameras
<u>65</u>	. With endoscope
<u>66</u>	.. Dental
<u>67</u>	.. Laser
<u>68</u>	.. Illumination
<u>69</u>	... Controlled by video signal
<u>70</u>	... Color sequential illumination
<u>71</u>	.. Color TV
<u>72</u>	.. Plural endoscopes interchangeable
<u>73</u>	.. External camera
<u>74</u>	.. With additional adjunct (e.g., recorder control, etc.)
<u>75</u>	.. Adaptor or connector
<u>76</u>	.. Physical structure of circuit element
<u>77</u>	. Human body observation
<u>78</u>	.. Eye
<u>79</u>	. Microscope
<u>80</u>	.. Electronic
<u>81</u>	. Underwater
<u>82</u>	. Hazardous or inaccessible
<u>83</u>	.. Furnace (e.g., nuclear reactor, etc.)
<u>84</u>	.. Pipeline
<u>85</u>	.. Borehole
<u>86</u>	. Manufacturing
<u>87</u>	.. Electronic circuit chip or board (e.g., positioning)
<u>88</u>	.. Web, sheet or filament
<u>89</u>	.. Agricultural or food production
<u>90</u>	.. Welding
<u>91</u>	.. Sorting, distributing or classifying
<u>92</u>	.. Quality inspection
<u>93</u>	... Color TV
<u>94</u>	.. Position detection
<u>95</u>	... Alignment or positioning
<u>96</u>	. Film, disc or card scanning
<u>97</u>	.. Motion picture film scanner
<u>98</u>	... Mechanical optical scanning
<u>99</u>	.... Flying spot scanner
<u>100</u>	... Flying spot scanner
<u>101</u>	.... Color TV
<u>102</u>	.... Intermittent film movement
<u>103</u>	.... With modification of scanner sweep
<u>104</u>	... Color TV
<u>105</u>	... Intermittent film movement
<u>106</u>	... With modification of scanner sweep
<u>107</u>	.. With record location
<u>108</u>	.. Flying spot scanner
<u>109</u>	... Color TV
<u>110</u>	.. Slide
<u>111</u>	... Color TV
<u>112</u>	.. Microfilm
<u>113</u>	. Navigation
<u>114</u>	.. Remote control
<u>115</u>	.. Head-up display
<u>116</u>	.. Direction finding or location determination

<u>117</u>	.. Aircraft or spacecraft
<u>118</u>	.. Land vehicle
<u>119</u>	... Program control (e.g., path guidance, etc.)
<u>120</u>	... Farm vehicle
<u>121</u>	. Simulator
<u>122</u>	.. Visibility (e.g., fog, etc.)
<u>123</u>	.. Aircraft or spacecraft
<u>124</u>	.. Ship
<u>125</u>	. Flaw detector
<u>126</u>	.. Of electronic circuit chip or board
<u>127</u>	.. Of transparent container or content (e.g., bottle, jar, etc.)
<u>128</u>	.. Of surface (e.g., texture or smoothness, etc.)
<u>129</u>	.. By comparison with reference object
<u>130</u>	... With stored representation of reference object
<u>131</u>	.. With specific illumination detail
<u>132</u>	... With strobe illumination
<u>133</u>	.. With circuit detail
<u>134</u>	... Including line to line comparison
<u>135</u>	. Object or scene measurement
<u>136</u>	.. Projected scale on object
<u>137</u>	.. Scale on camera target
<u>138</u>	.. Pulse or clock counting
<u>139</u>	.. Multiple cameras on baseline (e.g., range finder, etc.)
<u>140</u>	.. Distance by apparent target size (e.g., stadia, etc.)
<u>141</u>	.. By cursor coordinate location
<u>142</u>	.. With camera and object moved relative to each other
<u>143</u>	. Observation of or from a specific location (e.g., surveillance)
<u>144</u>	.. Aerial viewing
<u>145</u>	... With linear array
<u>146</u>	... With rotating reflector
<u>147</u>	... With transformation or rectification
<u>148</u>	.. Vehicular
<u>149</u>	... Traffic monitoring
<u>150</u>	.. Point of sale or banking
<u>151</u>	.. Camera concealment
<u>152</u>	.. Intrusion detection
<u>153</u>	... Using plural cameras
<u>154</u>	.... Motion detection
<u>155</u>	... Motion detection
<u>156</u>	.. Access control
<u>157</u>	.. Sporting event
<u>158</u>	.. Portable
<u>159</u>	.. Plural cameras
<u>160</u>	.. Reading meter or data printer
<u>161</u>	. Object comparison (e.g., remote verification of signature, etc.)
<u>162</u>	RESPONSIVE TO NONVISIBLE ENERGY
<u>163</u>	. Sonic or ultrasonic
<u>164</u>	. Infrared
<u>165</u>	.. Pyroelectric
<u>166</u>	.. With linear array
<u>167</u>	... With rotating reflector
<u>168</u>	.. With rotating reflector
<u>169</u>	OBJECT TRACKING
<u>170</u>	. Using tracking gate
<u>171</u>	.. Centroidal tracking
<u>172</u>	. Centroidal tracking
<u>173</u>	CATHODE-RAY TUBE BURN-IN PREVENTION
<u>174</u>	. Camera
<u>175</u>	CAMERA WITH BUILT-IN TEST SIGNAL GENERATOR, TEST PATTERN, OR ADJUSTING ADJUNCT
<u>176</u>	. Setup

<u>177</u>	DISPLAY OR RECEIVER WITH BUILT-IN TEST SIGNAL GENERATOR, TEST PATTERN, OR ADJUSTING ADJUNCT
<u>178</u>	. Setup
<u>179</u>	.. Color match comparator
<u>180</u>	MONITORING, TESTING, OR MEASURING
<u>181</u>	. Test signal generator
<u>182</u>	.. Chroma or color bar
<u>183</u>	.. VITS or ILTS
<u>184</u>	. Monitor
<u>185</u>	.. Combined plural functions (e.g., picture and waveform monitor)
<u>186</u>	.. Vectorscope
<u>187</u>	. Testing of camera
<u>188</u>	.. Using test chart
<u>189</u>	. Testing of image reproducer
<u>190</u>	.. Alignment-manufacturing
<u>191</u>	.. Display photometry
<u>192</u>	. Transmission path testing
<u>193</u>	.. Signal to noise ratio
<u>194</u>	. Synchronization (e.g., H-sync to subcarrier)
<u>195</u>	MECHANICAL OPTICAL SCANNING
<u>196</u>	. Color TV
<u>197</u>	. With fiber optics
<u>198</u>	. By acoustic wave
<u>199</u>	. Moving aperture
<u>200</u>	.. Drum or belt
<u>201</u>	.. Multiple scanning elements
<u>202</u>	. Moving lens or refractor
<u>203</u>	. Moving reflector
<u>204</u>	.. Helical element
<u>205</u>	.. Vibrating or oscillating
<u>206</u>	SPECIAL SCANNING (E.G., SPIRAL, RANDOM, ZIGZAG)
<u>207</u>	CAMERA, SYSTEM AND DETAIL
<u>208</u>	. Camera image stabilization
<u>209</u>	. With flying spot scanner
<u>210</u>	.. For color scanning
<u>211</u>	. Remote control
<u>212</u>	.. By multiplexed control signals (e.g., duplexing, etc.)
<u>213</u>	.. Preprogrammed or stored control instructions
<u>214</u>	.. Body movement actuation
<u>215</u>	. With streak device
<u>216</u>	. Low light level
<u>217</u>	.. With image intensifier
<u>218</u>	. Unitary image formed by compiling sub-areas of same scene (e.g., array of cameras)
<u>219</u>	. Swing driven
<u>220</u>	. Still and motion modes of operation
<u>221</u>	.. Exposure control
<u>222</u>	. Combined image signal generator and general image signal processing
<u>223</u>	.. Color balance (e.g., white balance)
<u>224</u>	... Dependent upon operation or characteristic of iris, flash, lens, or filter
<u>225</u>	... With means for preventing colored object from effecting color balance
<u>226</u>	... Including flicker detection (e.g., fluorescent)
<u>227</u>	... With ambient light sensor
<u>228</u>	... Responsive to output signal
<u>229</u>	.. Combined automatic gain control and exposure control (i.e., sensitivity control)
<u>230</u>	... Readout of solid-state image sensor considered or altered
<u>231</u>	.. With details of static memory for output image (e.g., for a still camera)
<u>232</u>	... With storage of additional, non-image information (e.g., audio, time, date)
<u>233</u>	... Detachable
<u>234</u>	.. Details of luminance signal formation in color camera
<u>235</u>	... With means for providing high band and low band luminance signals
<u>236</u>	.... Using distinct luminance image sensor

<u>237</u>	.... For single sensor type camera supplying plural color signals
<u>238</u>	... Using distinct luminance image sensor
<u>239</u>	.. Camera and video special effects (e.g., subtitling, fading, or merging)
<u>240</u>	... Electronic zoom
<u>241</u>	.. Including noise or undesired signal reduction
<u>242</u>	... Color TV
<u>243</u>	... Dark current
<u>244</u>	.... With control of sensor temperature
<u>245</u>	.... Using dummy pixels
<u>246</u>	... Defective pixel (e.g., signal replacement)
<u>247</u>	.... With memory of defective pixels
<u>248</u>	... Smear
<u>249</u>	.... In charge coupled type sensor
<u>250</u>	... In charge coupled type sensor
<u>251</u>	... Shading or black spot correction
<u>252</u>	.. With transition or edge sharpening (e.g., aperture correction)
<u>253</u>	... Color TV
<u>254</u>	.. Gray scale transformation (e.g., gamma correction)
<u>255</u>	... Amplitude control (e.g., automatic gain control)
<u>256</u>	.... Color TV (e.g., saturation)
<u>257</u>	.. With DC level control
<u>258</u>	... With bias illumination
<u>259</u>	.... Combined with color separating optical system
<u>260</u>	.... For single scanning device color camera
<u>261</u>	..... Plural bias illuminators
<u>262</u>	. With plural image scanning devices
<u>263</u>	.. Color imagery registration
<u>264</u>	.. Scanning devices offset in the image plane
<u>265</u>	.. Each supplying only one color signal
<u>266</u>	. With single image scanning device supplying plural color signals
<u>267</u>	.. Separate complete images on face of pickup device
<u>268</u>	.. Color sequential
<u>269</u>	... With color sequential illumination
<u>270</u>	... With moving color filters
<u>271</u>	.... Four or more color types
<u>272</u>	.. Solid-state multicolor image sensor
<u>273</u>	... With color filter or operation according to color filter
<u>274</u>	.... Having overlapping elements
<u>275</u>	.... Staggered or irregular elements
<u>276</u>	.... Including transparent elements
<u>277</u>	..... With three or more colors
<u>278</u>	.... Based on more than four colors
<u>279</u>	.... Based on four colors
<u>280</u>	.... Based on three colors
<u>281</u>	.... X-Y architecture
<u>282</u>	.... Charge coupled architecture
<u>283</u>	..... With multiple output registers
<u>284</u>	.. Cathode-ray tube
<u>285</u>	... Phase separable signals
<u>286</u>	.... With indexing
<u>287</u>	..... Conductive grid at target
<u>288</u>	..... Index elements outside of image area
<u>289</u>	... Frequency separable signals
<u>290</u>	.... Specified optical filter arrangement
<u>291</u>	..... Combined with grating, lens array, or refractor
<u>292</u>	..... Having diagonally arranged stripes
<u>293</u>	.... Interdigital signal electrodes
<u>294</u>	. Solid-state image sensor
<u>295</u>	.. Time delay and integration mode (TDI)
<u>296</u>	.. Electronic shuttering
<u>297</u>	.. Accumulation or integration time responsive to light or signal intensity

<u>298</u>	... In charge coupled type image sensor
<u>299</u>	.... With overflow gate or drain
<u>300</u>	.. With amplifier
<u>301</u>	... Pixel amplifiers
<u>302</u>	.. X - Y architecture
<u>303</u>	... With charge transfer type output register
<u>304</u>	... With charge transfer type selecting register
<u>305</u>	... With interlacing
<u>306</u>	... Charge injection device (CID)
<u>307</u>	... Photosensitive switching transistors or "static induction" transistors
<u>308</u>	... Including switching transistor and photocell at each pixel site (e.g., "MOS-type" image sensor)
<u>309</u>	... Exclusively passive light responsive elements in the matrix
<u>310</u>	.... With diode in series with photocell
<u>311</u>	.. Charge-coupled architecture
<u>312</u>	... With timing pulse generator
<u>313</u>	... With bias charge injection
<u>314</u>	... With excess charge removal (e.g., overflow drain)
<u>315</u>	... With staggered or irregular photosites or specified channel configuration
<u>316</u>	... Charges transferred to opposed registers
<u>317</u>	... Field or frame transfer type
<u>318</u>	.... With recirculation of charge
<u>319</u>	.... Charges alternately switched from vertical registers into separate storage registers; or having vertical transfer gates
<u>320</u>	.... Interline readout
<u>321</u>	..... Using multiple output registers
<u>322</u>	... Interline readout
<u>323</u>	.... Using multiple output registers
<u>324</u>	... Line transfer type
<u>325</u>	. Cathode-ray tube
<u>326</u>	.. Automatic beam focusing or alignment
<u>327</u>	.. Automatic beam current control
<u>328</u>	.. Remanent image erasure
<u>329</u>	.. With emissive target or photocathode (e.g., orthicon)
<u>330</u>	... Dissector tube
<u>331</u>	.. With photoconductive target (e.g., vidicon)
<u>332</u>	. Array of photocells (i.e., nonsolid-state array)
<u>333.01</u>	. With electronic viewfinder or display monitor
<u>333.02</u>	.. With display of additional information
<u>333.03</u>	... Including display of a frame and line of sight determination
<u>333.04</u>	... Including warning indication
<u>333.05</u>	.. Display of multiple images (e.g., thumbnail images, etc.)
<u>333.06</u>	.. Movable or rotatable unit
<u>333.07</u>	... Detachable
<u>333.08</u>	.. Including optics
<u>333.09</u>	... With optical viewfinder (e.g., correction for parallax, etc.)
<u>333.1</u>	... With projector function
<u>333.11</u>	.. Use for previewing images (e.g., variety of image resolutions, etc.)
<u>333.12</u>	.. Modification of displayed image
<u>333.13</u>	.. Power saving mode
<u>335</u>	. Optics
<u>336</u>	.. Color separating optics
<u>337</u>	... Prism arrangement
<u>338</u>	.... With dichroic layer or air gap between prism sections
<u>339</u>	... Exclusively dichroic elements
<u>340</u>	.. With optics peculiar to solid-state sensor
<u>341</u>	.. Optical viewfinder
<u>342</u>	.. With frequency selective filter (e.g., IR cut, optical LPF, etc.)
<u>343</u>	.. Optical multiplexing
<u>344</u>	.. Optical path switching
<u>345</u>	.. Focus control
<u>346</u>	... With display of focusing condition or alarm

<u>347</u>	... With zoom position detection or interrelated iris control
<u>348</u>	... Using active ranging
<u>349</u>	... Using image signal
<u>350</u>	.... With auxiliary sensor or separate area on imager
<u>351</u>	.... With oscillation of lens or sensor to optimize error signal
<u>352</u>	.... With motion detection
<u>353</u>	.... By detecting contrast
<u>354</u>	.... By analyzing high frequency component
<u>355</u>	..... Plural high frequencies
<u>356</u>	..... Detection of peak or slope of image signal
<u>357</u>	... Servo unit structure or mechanism
<u>358</u>	.. Variable magnification (i.e., zoom)
<u>359</u>	.. Fiber optics
<u>360</u>	.. Lens or filter substitution
<u>361</u>	... Automatic
<u>362</u>	.. Exposure control
<u>363</u>	... Automatic control of iris, stop, or diaphragm
<u>364</u>	.... Based on image signal
<u>365</u>	..... Contrast
<u>366</u>	.... Based on ambient light
<u>367</u>	... Periodic shuttering
<u>368</u>	.... Rotary
<u>369</u>	.. Changing viewing angle via optics
<u>370</u>	.. With object or scene illumination
<u>371</u>	.. Flash or strobe
<u>372</u>	.. Power supply
<u>373</u>	.. Support or housing
<u>374</u>	.. For internal camera components
<u>375</u>	.. For specified accessory
<u>376</u>	.. Portable or hand-held
<u>377</u>	CATHODE-RAY TUBE DISPLAY EXCESSIVE VOLTAGE CONTROL
<u>378</u>	.. With disabling
<u>379</u>	CATHODE-RAY TUBE DISPLAY AUTOMATIC BLACK LEVEL BIAS CONTROL
<u>380</u>	CATHODE-RAY TUBE DISPLAY BEAM CURRENT CONTROL
<u>381</u>	.. With beam energy determining color
<u>382</u>	.. Variable depth of penetration of electron beam into the luminescent layer
<u>383</u>	MODULAR IMAGE DISPLAY SYSTEM
<u>384.1</u>	BANDWIDTH REDUCTION SYSTEM
<u>385.1</u>	.. Plural video programs in single channel
<u>386.1</u>	.. Color television
<u>387.1</u>	.. Data rate reduction
<u>388.1</u>	.. Multiple channel (e.g., plural carrier)
<u>389.1</u>	.. Including one conventional or compatible channel (e.g., two channel NTSC systems)
<u>390.1</u>	.. Data rate reduction
<u>391.1</u>	.. Specified color signal
<u>392.1</u>	... Sub-Nyquist sampling
<u>393.1</u>	... Direct coding of color composite signal
<u>394.1</u>	.... Predictive coding
<u>395.1</u>	.... Transform coding
<u>396.1</u>	... Including luminance signal
<u>397.1</u>	.. Using separate coders for different picture features (e.g., highs, lows)
<u>398.1</u>	... Subband encoding (e.g., low horizontal/low vertical frequency, low horizontal/high vertical frequency)
<u>399.1</u>	.. Picture feature dependent sampling rate or sample selection
<u>400.1</u>	.. Involving hybrid transform and difference coding
<u>401.1</u>	... With prior difference coding
<u>402.1</u>	.... Including motion vector
<u>403.1</u>	.. Involving transform coding
<u>404.1</u>	... Adaptive
<u>405.1</u>	.... Sampling
<u>406.1</u>	.... Normalizer
<u>407.1</u>	.... Motion

<u>408.1</u>	... Transformed sample selection (e.g., hierarchical sample selection)
<u>409.1</u>	.. Involving difference transmission (e.g., predictive)
<u>410.1</u>	... Involving both base and differential encoding
<u>411.1</u>	... Plural predictors
<u>412.1</u>	.... Including temporal predictor (e.g., frame difference)
<u>413.1</u>	..... Including motion vector
<u>414.1</u>	.... Involving pattern matching
<u>415.1</u>	... Including temporal prediction (e.g., frame difference)
<u>416.1</u>	.... Including motion vector
<u>417.1</u>	.... Involving pattern matching
<u>418.1</u>	... Involving pattern matching
<u>419.1</u>	... Coding element controlled by buffer fullness
<u>420.1</u>	.. Involving block coding
<u>421.1</u>	... Involving minimum, maximum, or average of block
<u>422.1</u>	.. Involving pattern matching
<u>423.1</u>	.. Arrangements for multiplexing one video signal, one or more audio signals, and a synchronizing signal
<u>424.1</u>	.. Sub-Nyquist sampling
<u>424.2</u>	... Adaptive
<u>425.1</u>	.. Associated signal processing
<u>425.2</u>	... Involving error detection or correction
<u>425.3</u>	... Involving signal formatting
<u>425.4</u>	... Involving synchronization
<u>426.1</u>	. Format type
<u>427.1</u>	.. Including frequency folding (e.g., subsampling)
<u>428.1</u>	... Spotwobble (e.g., pixels from plural lines form single transmitted line)
<u>429.1</u>	... Including video-related information
<u>430.1</u>	... Using two or more frames
<u>431.1</u>	.... Motion adaptive
<u>432.1</u>	.. Added video information in standard channel format
<u>433.1</u>	... Including additional modulation of picture carrier (e.g., quadrature)
<u>434.1</u>	... Including information in sync, blanking, or overscan
<u>435.1</u>	.... During vertical blanking interval
<u>436.1</u>	... Including use of a subcarrier
<u>437.1</u>	.. Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band)
<u>438.1</u>	. Individual processing of different parts of image frequency band (e.g., sum and difference, high band/low band)
<u>439.1</u>	. Frame field or line dropping followed by time expansion and time compression
<u>440.1</u>	. Scan rate variation
<u>441</u>	FORMAT CONVERSION
<u>442</u>	. Involving polar to Cartesian or vice versa
<u>443</u>	. Involving both line number and field rate conversion (e.g., PAL to NTSC)
<u>444</u>	.. Specified chrominance signal
<u>445</u>	. Conversion between standards with different aspect ratios
<u>446</u>	. Progressive to interlace
<u>447</u>	. Field rate type flicker compensating
<u>448</u>	. Line doublers type (e.g., interlace to progressive IDTV type)
<u>449</u>	.. Including nonstandard signal detection
<u>450</u>	.. Specified chrominance processing (e.g., Y/C separation)
<u>451</u>	... Motion adaptive
<u>452</u>	.. Motion adaptive
<u>453</u>	. Specified chrominance processing
<u>454</u>	.. PAL to NTSC or vice versa
<u>455</u>	.. In which simultaneous signals are converted into sequential signals or vice versa
<u>456</u>	... Field or frame sequential to simultaneous
<u>457</u>	.. Frequency change of subcarrier
<u>458</u>	. Changing number of lines for standard conversion
<u>459</u>	. Changing number of fields for standard conversion
<u>460</u>	DIVERSE DEVICE CONTROLLED BY INFORMATION EMBEDDED IN VIDEO SIGNAL
<u>461</u>	NONPICTORIAL DATA PACKET IN TELEVISION FORMAT
<u>462</u>	. Audio

<u>463</u>	. Full field
<u>464</u>	. Sync
<u>465</u>	. Data separation or detection
<u>466</u>	. Error correction or prevention
<u>467</u>	. Data format
<u>468</u>	. Including teletext decoder or display
<u>469</u>	FORMAT
<u>470</u>	. Adapted to reduce noise or for frequency modulation (e.g., variable gain)
<u>471</u>	. Including pulse modulation of video signal (e.g., pulse width, PAM)
<u>472</u>	.. Pulse code modulation
<u>473</u>	. Including additional information
<u>474</u>	.. For controlling video processing (e.g., digitally assisted video)
<u>475</u>	.. Additional modulation of picture carrier (e.g., quadrature)
<u>476</u>	.. During sync, blanking, or overscan
<u>477</u>	... During both vertical and horizontal blanking
<u>478</u>	... During vertical blanking
<u>479</u>	... During horizontal blanking
<u>480</u>	.... Sound signal
<u>481</u>	..... Plural (e.g., stereo or SAP)
<u>482</u>	... Sound signal
<u>483</u>	.... Plural (e.g., stereo or SAP)
<u>484</u>	.. Sound signal
<u>485</u>	... Plural (e.g., stereo or SAP)
<u>486</u>	.. Including the use of a subcarrier
<u>487</u>	. Broadband (e.g., occupying two adjacent channels or parts thereof)
<u>488</u>	. Specified color signal format
<u>489</u>	.. Time division multiplexing of luminance and chrominance (e.g., MAC)
<u>490</u>	.. Field or frame sequential systems
<u>491</u>	.. Simultaneous and sequential (e.g., SECAM)
<u>492</u>	.. Simultaneous signals
<u>493</u>	... Luminance plus dual-phase modulated color carrier
<u>494</u>	... Dot sequential
<u>495</u>	. Of sync signal
<u>496</u>	.. Color
<u>497</u>	FLUTTER OR JITTER CORRECTION (E.G., DYNAMIC REPRODUCTION)
<u>498</u>	. Specified color
<u>499</u>	.. Using frequency shifting (e.g., heterodyne)
<u>500</u>	SYNCHRONIZATION
<u>501</u>	. Reprocessing
<u>502</u>	.. Specified color
<u>503</u>	. For sequential color components
<u>504</u>	.. With line rate switch (e.g., SECAM)
<u>505</u>	. Phase locking regenerated subcarrier to color burst
<u>506</u>	.. Burst gate
<u>507</u>	.. Including demodulator
<u>508</u>	... Digital
<u>509</u>	... With line rate switch (e.g., PAL)
<u>510</u>	. Locking of computer to video timebase
<u>511</u>	. Control of picture position
<u>512</u>	. Locking of video or audio to reference timebase
<u>513</u>	.. Frame or field synchronizers
<u>514</u>	... Color television
<u>515</u>	.. Audio to video
<u>516</u>	.. By controlling video or sync generator
<u>517</u>	... Color television
<u>518</u>	.. Including compensation for transmission delays
<u>519</u>	... Color television
<u>520</u>	.. Color
<u>521</u>	. Sync generation
<u>522</u>	.. Means on video signal generator
<u>523</u>	.. With addressable memory

<u>524</u>	.. With counter or frequency divider
<u>525</u>	. Sync separation
<u>526</u>	.. Field or frame identification
<u>527</u>	... Color
<u>528</u>	.. Including automatic gain control (AGC)
<u>529</u>	.. To produce distinct vertical output
<u>530</u>	... With distinct horizontal output
<u>531</u>	.. To produce distinct horizontal output
<u>532</u>	.. By amplitude
<u>533</u>	.. Noise reduction
<u>534</u>	... Amplitude limiting
<u>535</u>	... Noise inversion
<u>536</u>	. Automatic phase or frequency control
<u>537</u>	.. Of sampling or clock
<u>538</u>	... With data interpolation
<u>539</u>	... Color
<u>540</u>	.. Horizontal sync component
<u>541</u>	... Cascaded phase or frequency adjusting
<u>542</u>	... Plural distinct operating modes
<u>543</u>	.... Line rates
<u>544</u>	.... Locking rates
<u>545</u>	..... Different mode during vertical blanking
<u>546</u>	... Countdown
<u>547</u>	.. Vertical sync component
<u>548</u>	... Countdown
<u>549</u>	.. Using color subcarrier
<u>550</u>	. To achieve interlaced scanning
<u>551</u>	. Of mechanical scan
<u>552</u>	COMBINED WITH DIVERSE ART DEVICE (E.G., COMPUTER, TELEPHONE)
<u>553</u>	BASIC RECEIVER WITH ADDITIONAL FUNCTION
<u>554</u>	. Multimode (e.g., composite, Y, C; baseband RF)
<u>555</u>	.. For receiving more than one format at will (e.g., NTSC/PAL)
<u>556</u>	... For format with different aspect ratio
<u>557</u>	... Color processing
<u>558</u>	.. Format detection
<u>559</u>	. Instant replay or freeze frame
<u>560</u>	.. Color television processing
<u>561</u>	. For magnification of part of image
<u>562</u>	.. Color television
<u>563</u>	. For display of additional information
<u>564</u>	.. Simultaneously and on same screen (e.g., multiscreen)
<u>565</u>	... Picture in picture
<u>566</u>	.... Color television
<u>567</u>	.... Memory
<u>568</u>	.... Compression
<u>569</u>	.. Receiver indicator (e.g., on screen display)
<u>570</u>	... Tuning indication
<u>571</u>	IMAGE SIGNAL PROCESSING CIRCUITRY SPECIFIC TO TELEVISION
<u>572</u>	. A/D converters
<u>573</u>	.. Analog to binary
<u>574</u>	.. Including dither
<u>575</u>	. Video reprocessing
<u>576</u>	. Selective image modification (e.g., touch up)
<u>577</u>	.. Color change type
<u>578</u>	. Special effects
<u>579</u>	.. Strobe (e.g., ball tracker)
<u>580</u>	.. Geometric transformation
<u>581</u>	... Size change
<u>582</u>	.... Color signal
<u>583</u>	... Rotation
<u>584</u>	.. Combining plural sources

<u>585</u>	... Including priority key
<u>586</u>	... Foreground/background insertion
<u>587</u>	.... Including hue detection (e.g., chroma key)
<u>588</u>	... Multiple distinct images (e.g., splitscreen)
<u>589</u>	... Including insertion of characters or graphics (e.g., titles)
<u>590</u>	... Specified details of key signal generation or processing
<u>591</u>	.... Self keyers (e.g., key generated from video being mixed)
<u>592</u>	..... Chroma key (e.g., hue detector)
<u>593</u>	.... Artificial key generation
<u>594</u>	..... Wipes signal generator
<u>595</u>	..... Fades signal generator
<u>596</u>	..... Window signal generator (e.g., rectangle)
<u>597</u>	.... For generation of soft edge (e.g., blending)
<u>598</u>	... Specified details of signal combining
<u>599</u>	.... Color signal
<u>600</u>	.... Graphic or character insertion type
<u>601</u>	... Marker or pointer generator
<u>602</u>	. Display controlled by ambient light
<u>603</u>	.. Specified color (e.g., saturation and contrast control)
<u>604</u>	. Including nonstandard signal detection controlling processing
<u>605</u>	. Including vertical interval reference (e.g., VIR)
<u>606</u>	. Combined noise reduction and transition sharpening
<u>607</u>	. Noise or undesired signal reduction
<u>608</u>	.. Processing at encoder or transmitter (e.g., pre-correction)
<u>609</u>	... Reduction of chrominance luminance cross-talk (e.g., precomb)
<u>610</u>	.... Adaptive
<u>611</u>	... To suppress echo
<u>612</u>	... Color signals
<u>613</u>	... Complementary system (e.g., preemphasis - deemphasis)
<u>614</u>	.. Ghost elimination (e.g., multipath)
<u>615</u>	.. Blackspot or shading correction (e.g., corrects for fixed pattern defects)
<u>616</u>	.. Dropout compensator (e.g., replacement type)
<u>617</u>	... For color television
<u>618</u>	.. For removal of low amplitude random noise (e.g., variable bandwidth)
<u>619</u>	... Averaging type
<u>620</u>	.... Using frame or field delays (e.g., motion adaptive)
<u>621</u>	.... For color television
<u>622</u>	... Noise component generator, limiter, subtractor type
<u>623</u>	... Coring type
<u>624</u>	.. For color television
<u>625</u>	. Transition or edge sharpeners
<u>626</u>	.. Scanning velocity modulation
<u>627</u>	.. Including processing to prevent the addition of noise (e.g., coring enhancement signal, noise responsive peaking control)
<u>628</u>	.. Vertical transition
<u>629</u>	... Including horizontal transition
<u>630</u>	.. Color television processing
<u>631</u>	... Luminance transition controls chrominance transition
<u>632</u>	. Sound muting
<u>633</u>	.. Including picture blanking
<u>634</u>	. Picture blanking
<u>635</u>	.. For color television
<u>636</u>	.. At transmitter
<u>637</u>	.. Retrace type
<u>638</u>	. Chrominance signal demodulator
<u>639</u>	.. Digital
<u>640</u>	.. PAL signal
<u>641</u>	.. For quadrature signal (e.g., NTSC)
<u>642</u>	. Color encoder or chrominance signal modulator
<u>643</u>	. Color killer
<u>644</u>	.. Including chrominance signal amplitude control

<u>645</u>	. Chrominance signal amplitude control (e.g., saturation)
<u>646</u>	.. Digital
<u>647</u>	.. Automatic
<u>648</u>	... Picture responsive (e.g., overload)
<u>649</u>	. Hue control
<u>650</u>	.. Scene by scene color correction
<u>651</u>	.. Digital
<u>652</u>	.. Fleshtone corrector (e.g., fixed)
<u>653</u>	... By phase change of chrominance signal or subcarrier
<u>654</u>	.. By phase change of chrominance signal or subcarrier
<u>655</u>	. Color balance or temperature (e.g., white balance)
<u>656</u>	.. Receiver type
<u>657</u>	... Including feedback control
<u>658</u>	.... Including optical sensor to observe display (e.g., CRT)
<u>659</u>	. Matrixing or mixing
<u>660</u>	.. Digital
<u>661</u>	.. Masking (e.g., R, G, B to R', G', B')
<u>662</u>	. Chrominance phase adjuster (e.g., inverter)
<u>663</u>	. Chrominance-luminance signal separation
<u>664</u>	.. Logic circuit type
<u>665</u>	.. Including comb filter (e.g., using line, field, frame delays)
<u>666</u>	... Including adaptive artifacts removal (e.g., switchable trap or LPF in luma channel)
<u>667</u>	... Adaptive comb filter
<u>668</u>	.... Selects or blends two or more separated signals to derive output
<u>669</u>	..... Including frame or field delays (e.g., motion adaptive)
<u>670</u>	... Including frame or field delays
<u>671</u>	. Gray scale transformation
<u>672</u>	.. Using histogram
<u>673</u>	.. Combined contrast control and brightness or DC level control
<u>674</u>	.. Nonlinear amplitude modification (e.g., gamma)
<u>675</u>	... Color television
<u>676</u>	... By adding outputs from parallel channels
<u>677</u>	... With specified DC level control
<u>678</u>	.. Automatic range control (e.g., AGC, automatic contrast control)
<u>679</u>	... Color television
<u>680</u>	... At transmitter
<u>681</u>	... Carrier envelope
<u>682</u>	... Sync or blanking
<u>683</u>	.... Noise reduction or elimination
<u>684</u>	.... Keyed
<u>685</u>	... Delayed AGC
<u>686</u>	.. Manual contrast control (e.g., linear)
<u>687</u>	. Brightness control
<u>688</u>	.. By subtracting averaged active video portion (e.g., flare)
<u>689</u>	.. With DC clamping
<u>690</u>	. White limiter
<u>691</u>	. DC insertion
<u>692</u>	.. Color television
<u>693</u>	.. At transmitter
<u>694</u>	.. For plural signals or signal components
<u>695</u>	.. Level inserted during keying signals (e.g., keyed clamp)
<u>696</u>	.. Insertion level derived by key signals
<u>697</u>	... Level derived within feedback path
<u>698</u>	.. Diode
<u>699</u>	. Motion vector generation
<u>700</u>	. Motion dependent key signal generation or scene change detection
<u>701</u>	.. Specified processing of frame or field difference signal (e.g., noise reduction, key signal spreading)
<u>702</u>	.. Composite color signal
<u>703</u>	. Hue or saturation detector
<u>704</u>	. Sweep expansion or reduction
<u>705</u>	. Switching

<u>706</u>	.. receiver type
<u>707</u>	. Amplifiers
<u>708</u>	. Color television signal processing
<u>709</u>	.. Signal modification for one gun color tube (e.g., dot sequential)
<u>710</u>	.. Differential phase or amplitude responsive
<u>711</u>	.. Frequency response modification
<u>712</u>	.. Luminance channel circuitry
<u>713</u>	.. Chrominance channel circuitry
<u>714</u>	. With details of static storage device
<u>715</u>	.. For storing a sequence of frames or fields
<u>716</u>	.. Specified data formatting (e.g., memory mapping)
<u>717</u>	... Of color signal
<u>718</u>	.. Accessing circuitry
<u>719</u>	... Including processor interface (e.g., CPU)
<u>720</u>	. Digital
<u>721</u>	.. Plural processing units
<u>722</u>	STUDIO EQUIPMENT
<u>723</u>	TELEVISION TRANSMITTER CIRCUITRY
<u>724</u>	. Modulator
<u>725</u>	RECEIVER CIRCUITRY
<u>726</u>	. Demodulator
<u>727</u>	.. Color television
<u>728</u>	. Color television
<u>729</u>	. Television receiver adapted to receive radio broadcast or in combination with radio receiver
<u>730</u>	. Power supply
<u>731</u>	. Tuning
<u>732</u>	.. Search tuning
<u>733</u>	.. Tuning voltage
<u>734</u>	. Remote control
<u>735</u>	. Automatic frequency control
<u>736</u>	. Sound traps
<u>737</u>	. Intercarrier circuits
<u>738</u>	. Sound circuit
<u>739</u>	VIDEO DISPLAY
<u>740</u>	. Array of shutters
<u>741</u>	. Red-white phenomena
<u>742</u>	. Color sequential
<u>743</u>	.. With moving color filters
<u>744</u>	. Projection device
<u>745</u>	.. With alignment, registration or focus
<u>746</u>	... Raster shape distortion
<u>747</u>	... Raster size or position compensation
<u>748</u>	.. With cooling device
<u>749</u>	... Liquid
<u>750</u>	.. Plural parallel light modulators
<u>751</u>	... Liquid crystal
<u>752</u>	... Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.)
<u>753</u>	.... Electron beam addressed
<u>754</u>	... Acousto-optic (e.g., Bragg cell, etc.)
<u>755</u>	... Deformable medium
<u>756</u>	... With optical element
<u>757</u>	.... Beam combining
<u>758</u>	.. Plural serial light modulators
<u>759</u>	.. Single light modulator
<u>760</u>	... Color TV
<u>761</u>	.... Liquid crystal
<u>762</u>	.... Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.)
<u>763</u>	..... Electron beam addressed
<u>764</u>	.... Deformable medium
<u>765</u>	..... Fluid
<u>766</u>	... Liquid crystal

<u>767</u>	... Using birefringent or polarizing medium (e.g., Kerr cell, Pockel's cell, etc.)
<u>768</u>	.... Electron beam addressed
<u>769</u>	... Acousto-optic
<u>770</u>	... Deformable medium
<u>771</u>	.... Including solid-state deflection elements (e.g., deformable mirror device (DMD))
<u>772</u>	.... Medium in tape, ribbon, or membrane form
<u>773</u>	.... Fluid medium
<u>774</u>	..... Deformed into diffraction grating (e.g., using electron beam)
<u>775</u>	.... Having significant chemical composition
<u>776</u>	.. Cathode-ray tube image source
<u>777</u>	... With intensifier
<u>778</u>	... Plural CRTs
<u>779</u>	.... With optical element
<u>780</u>	..... Beam combining
<u>781</u>	... With optical element
<u>782</u>	.... Mirror arrangement
<u>783</u>	..... Concave mirror
<u>784</u>	..... With correcting plate
<u>785</u>	.... Adjustable
<u>786</u>	.... With screen or absorption filter
<u>787</u>	... Cabinet or chassis
<u>788</u>	.... Folding
<u>789</u>	.. Cabinet or chassis
<u>790</u>	. Liquid crystal
<u>791</u>	.. Color TV
<u>792</u>	.. Scanning circuit
<u>793</u>	... Interlacing
<u>794</u>	.. With cabinet or housing structure
<u>795</u>	. Direct viewed light valve
<u>796</u>	. Vacuum panel
<u>797</u>	. Gas discharge
<u>798</u>	. Array of lamps
<u>799</u>	.. Color TV
<u>800</u>	. Electroluminescent (e.g., scanned matrix, etc.)
<u>801</u>	.. Light emitting diode
<u>802</u>	... Color TV
<u>803</u>	.. Color TV
<u>804</u>	. With optical fiber device
<u>805</u>	. Cathode-ray tube
<u>806</u>	.. With distortion, alignment or focus
<u>807</u>	... Color convergence correction
<u>808</u>	.. Color TV
<u>809</u>	... Separate electron beams in single tube
<u>810</u>	... One electron beam supplying more than one color
<u>811</u>	.... Beam position indicating
<u>812</u>	..... Horizontal stripes
<u>813</u>	..... Photoelectric sensor
<u>814</u>	..... Secondary emission sensor
<u>815</u>	.... With electron-optical color selection
<u>816</u>	... With color specific optical device
<u>817</u>	.... Electrochromic device
<u>818</u>	.. Protective device
<u>819</u>	... Radiation protection for user
<u>820</u>	... External electric or magnetic effect
<u>821</u>	... Implosion protection
<u>822</u>	.... Tensioned band
<u>823</u>	.... Protective glass or panel
<u>824</u>	..... Bonded to CRT faceplate
<u>825</u>	.. Support
<u>826</u>	... CRT having only support at front portion
<u>827</u>	... CRT position adjustable by user

<u>828</u>	... Deflection element support
<u>829</u>	.... Yoke
<u>830</u>	..... Supported by CRT neck
<u>831</u>	..... Adjustable
<u>832</u>	.. With optical element
<u>833</u>	... For line elimination
<u>834</u>	... Glare reduction
<u>835</u>	... Filters
<u>836</u>	. Cabinet or chassis
<u>837</u>	.. With vehicle
<u>838</u>	.. Portable
<u>839</u>	.. Modular
<u>840</u>	.. Multiple screens
<u>841</u>	.. Masking
<u>842</u>	.. Light shielding
<u>843</u>	.. Cabinet back
<u>844</u>	MISCELLANEOUS

CROSS-REFERENCE ART COLLECTIONS

<u>901</u>	HIGH SPEED TELEVISION SYSTEM
<u>902</u>	PHOTOCHROMIC
<u>903</u>	INCLUDING SIDE PANEL INFORMATION IN SINGLE CHANNEL
<u>904</u>	SEPARATION OR JOINING OF SIDE AND CENTER PANELS
<u>905</u>	REPRODUCTION OF A COLOR FIELD OR FRAME
<u>906</u>	TELEVISION SCHEDULE
<u>907</u>	COMMERCIAL VERIFICATION
<u>908</u>	CONVERTIBLE CIRCUITS (E.G., Y/C SEPARATION OR NOISE REDUCTION)
<u>909</u>	NOISE RESPONSIVE SIGNAL PROCESSING
<u>910</u>	FLICKER REDUCTION
<u>911</u>	LINE DOUBLER ADAPTED FOR REPRODUCING PROGRAM ORIGINALLY FROM FILM (E.G., 24 FRAME PER SECOND)
<u>912</u>	DIFFERENTIAL AMPLITUDE CONSIDERATION (E.G., AMPLITUDE VS. FREQUENCY)
<u>913</u>	LETTERBOX (E.G., DISPLAY 16:9 ASPECT RATIO IMAGE ON 4:3 SCREEN)
<u>914</u>	DELAY FOR EQUALIZATION

FOREIGN ART COLLECTIONS

FOR000 **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been classified have been transferred directly to FOR Collection listed below. These collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

<u>FOR100</u>	BANDWIDTH REDUCTION SYSTEM (348/384)
<u>FOR101</u>	. Plural video programs in single channel (348/385)
<u>FOR102</u>	.. Color television (348/386)
<u>FOR103</u>	.. Bit-rate reduction (348/387)
<u>FOR104</u>	.. Multiple channel (e.g., plural carrier) (348/388)
<u>FOR105</u>	.. Including one conventional or compatible channel (e.g., two channel NTSC systems) (348/389)
<u>FOR106</u>	. Bit-rate reduction (348/390)
<u>FOR107</u>	.. Specified color signal (348/391)
<u>FOR108</u>	... Sub-Nyquist sampling (348/392)
<u>FOR109</u>	... Direct coding of color composite signal (348/393)
<u>FOR110</u>	.... Predictive coding (348/394)
<u>FOR111</u>	.... Transform coding (348/395)
<u>FOR112</u>	... Including luminance signal (348/396)
<u>FOR113</u>	.. Using separate coders for different picture features (e.g., highs, lows) (348/397)
<u>FOR114</u>	... Sub-band encoding (e.g., low horizontal/low vertical frequency, low horizontal/high vertical frequency) (348/398)
<u>FOR115</u>	.. Picture feature dependent sampling rate or sample selection (348/399)

<u>FOR116</u>	.. Involving hybrid transform and difference coding (348/400)
<u>FOR117</u>	... With prior difference coding (348/401)
<u>FOR118</u> Including motion vector (348/402)
<u>FOR119</u>	.. Involving transform coding (348/403)
<u>FOR120</u>	... Adaptive (348/404)
<u>FOR121</u> Quantizer (348/405)
<u>FOR122</u> Normalizer (348/406)
<u>FOR123</u> Motion (348/407)
<u>FOR124</u>	... Transformed sample selection (e.g., hierarchical sample selection) (348/408)
<u>FOR125</u>	.. Involving difference transmission (348/409)
<u>FOR126</u>	... Involving both PCM and DPCM encoding (348/410)
<u>FOR127</u>	... Plural predictors (348/411)
<u>FOR128</u> Including temporal predictor (e.g., frame difference) (348/412)
<u>FOR129</u> Including motion vector (348/413)
<u>FOR130</u> Involving vector quantization (348/414)
<u>FOR131</u>	... Including temporal prediction (e.g., frame difference) (348/415)
<u>FOR132</u> Including motion vector (348/416)
<u>FOR133</u> Involving vector quantization (348/417)
<u>FOR134</u>	... Involving vector quantization (348/418)
<u>FOR135</u>	... Coding element controlled by buffer fullness (e.g., adaptive quantizer) (348/419)
<u>FOR136</u>	.. Involving block coding (348/420)
<u>FOR137</u>	... PCM represents minimum, maximum, or average of block (348/421)
<u>FOR138</u>	.. Involving vector quantization (348/422)
<u>FOR139</u>	.. Arrangements for multiplexing one video signal, one or more audio signals, and a synchronizing signal (348/423)
<u>FOR140</u>	.. Sub-Nyquist sampling (348/424)
<u>FOR141</u>	... Adaptive (348/425)
<u>FOR142</u>	.. Associated signal processing (348/845)
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